

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
4 March 2004 (04.03.2004)

PCT

(10) International Publication Number
WO 2004/018396 A1

(51) International Patent Classification⁷: C07C 17/20,
17/21, 19/08, B01J 23/86

(74) Agent: HEISER, David, E.; E.I. DU PONT DE
NEMOURS AND COMPANY, LEGAL PATENT
RECORDS CENTER, 4417 Lancaster Pike, Wilmington,
DE 19805 (US).

(21) International Application Number:
PCT/US2003/026324

(22) International Filing Date: 21 August 2003 (21.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/405,223 22 August 2002 (22.08.2002) US

(71) Applicants (for all designated States except US): E.I.
DU PONT DE NEMOURS AND COMPANY [US/US];
1007 Market Street, Wilmington, DE 19898 (US). NAPPA,
Mario, J. [US/US]; 3 Oakridge Court, Newark, DE 19711
(US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): RAO, Velliyur,
Nott, Mallikarjuna [US/US]; 1 Georgetown Avenue,
Wilmington, DE 19809 (US). ROSENFELD, H., David
[US/US]; 1927 Susquehannock Drive, Drumore, PA 17518
(US). SUBRAMONEY, Shekhar [IN/US]; 425 Stella
Drive, Hockessin, DE 19707 (US). SUBRAMANIAN,
Munirpallam, A. [US/US]; 20 Pratt Lane, Kennett Square,
PA 19348 (US). SIEVERT, Allen, C. [US/US]; 215 Rhett
Lane, Elkton, MD 21921 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,2,2-PENTAFLUOROETHANE

(57) Abstract: A process for the preparation of pentafluoroethane is disclosed which involves contacting a mixture comprising hydrogen fluoride and at least one one starting material selected from haloethanes of the formula CX₃191CHX₂ and haloethenes of the formula CX₂CX₂, where each X is independently selected from the group consisting of F and Cl (provided that no more than four of X are F), with a fluorination catalyst in a reaction zone to produce a product mixture comprising HF, HCl, pentafluoroethane, underfluorinated halogenated hydrocarbon intermediates and less than 0.2 mole percent chloropentafluoroethane based on the total moles of halogenated hydrocarbons in the product mixture. The process is characterized by the fluorination catalyst comprising (i) a crystalline cobalt-substituted alpha-chromium oxide where from about 0.05 atom % to about 6 atom % of the chromium atoms in the alpha-chromium oxide lattice are replaced by trivalent cobalt (Co⁺³) and/or (ii) a fluorinated crystalline oxide of (i).

WO 2004/018396 A1